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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/655,838	Applicant(s) EPSTEIN ET AL.	
	Examiner Natalie Lennox	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/10/2007*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

This Office Action has been issued in response to the amendments filed on Oct. 18, 2007. Claims 1-43 are pending with claims 1, 4, 5, 12-15, 18, 20-21, 25-28, and 31 amended.

Response to Arguments

1. Applicant's arguments filed Oct. 18, 2007 have been fully considered but they are not persuasive.

Regarding claim 31, applicant's argues "Chelba does not disclose or suggest parse trees that include both semantic and lexical information, nor is the parse tree selected based on the lexical information and the semantic information which considers tags, labels, and extensions to recognize speech." However, examiner respectfully disagrees with applicant given that Fig. 11 clearly shows the decoder 416 (speech recognizer) in connection to the lexicon 418 as well as the structured language model 420 for generating a speech recognition results. Further, paragraph [0088] of Chelba clearly specifies that the feature vectors from an input signal are provided to the decoder, which identifies a most likely sequence of words based on the stream of featured vectors, a lexicon, a structured language model, and the acoustic model. Therefore, Chelba does suggest the use of the lexical information contained in the lexicon for the decoding process (speech recognition process). Applicant also argued that Chelba does not provide a unified language model that includes a semantic language model and a lexical language model. However, examiner disagrees with the

applicant given that paragraph [0088] of Chelba specifies that the decoder makes use of both the lexicon and the structured language model for identifying the most likely sequence of words, therefore the fact that the two (lexicon and structured language model) are working together in order to identify the most likely sequence of words, suggests some unity between them both.

Regarding claims 1 and 18, applicant argues "Chelba and/or Lee fail to disclose or suggest at least: rescoring the likely hypothesis by using semantic content and lexical content by employing a semantic structured language model which combines a semantic language model and a lexical language model; and scoring parse trees to identify a best sentence according to the sentences' parse tree by employing semantic information and lexical information in the parse tree to clarify the recognized speech." However, examiner respectfully disagrees with applicant given that paragraph [0088] of Chelba clearly specifies that the feature vectors from an input signal are provided to the decoder, which identifies a most likely sequence of words based on the stream of featured vectors, a lexicon, a structured language model, and the acoustic model. Therefore, Chelba does suggest the use of the lexical information contained in the lexicon for the decoding process (speech recognition process). The fact that the lexicon and structured language model are working together in order to identify the most likely sequence of words, also suggests some unity between them both.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 31-33, 35, 38, and 4143 are rejected under 35 U.S.C. 102(e) as being anticipated by Chelba et al. (US 2003/0216905).

As per claim 31, Chelba et al. teach a system for speech recognition, comprising:

a unified language model including a semantic language model and a lexical language model (418 and 420 from Fig. 11, also paragraph [0088]);

a recognition engine configured to find a parse tree to analyze a word group using the lexical model and the semantic model, the parse tree including both lexical information and semantic information wherein the parse tree is selected based on the lexical information and the semantic information which considers tags, labels, and extensions to recognize speech (Paragraph [0088], decoder 416 of speech recognition system from Fig. 11, parse trees from Figs. 7A, 7B, and parsing from Figs. 9 and 10).

As per claim 32, Chelba et al. teach the system according to claim 31, wherein the parser tree includes semantic information and classer information used in identifying a best parser tree for a given word group (Fig. 7B illustrates labels 224, 226, 234, and 236 which contain semantic and classer (pertaining to a group) information).

As per claim 33, Chelba et al. teach the system according to claim 31, wherein the parser tree includes information extracted from parsed sentences to statistically model semantic and lexical content of sentences (Fig. 7B).

As per claim 35, Chelba et al. teach the system according to claim 31, wherein the semantic language model includes one or more of relative labels, token numbers, and answers to questions related to word order or placement (Paragraphs [0044] - [0046], and [0071] - [0072], headwords, non-terminal labels, r, n, k, (head-word, non-terminal label)).

As per claim 38, Chelba et al. teach the system according to claim 31, wherein the semantic model is trained by including history parameters and history questions (Paragraph [0054] show the probabilities from which the model is based with the use of history parameters. Also Fig. 4 demonstrates the use of the history questions in the model).

As per claim 41, Chelba et al. teach the system according to claim 31, further comprising a confidence measurement module (422 from Fig. 11).

As per claim 42, Chelba et al. teach the system according to claim 31, wherein the confidence measurement module employs a statistical method to combine word

sequences with the parse tree to determine a confidence score for recognized speech (Paragraphs [0081], [0083], [0088], and [0089], also Figs. 9, 10, and 11).

As per claim 43, Chelba et al. teach the system according to claim 31, wherein the confidence measurement module extracts probabilities assigned to tag nodes, label nodes, and extensions in the parse tree (Paragraphs [0081], [0083], [0088], and [0089], also Figs. 9, 10, and 11).

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 3, 5, 8-11, 14, 17-19, 21,24, 27, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chelba et al. (US 2003/0216905) in view of Lee et al. (US 2002/0087316).

As per claims 1 and 17, Chelba et al. teach a method and program storage device readable by machine for speech recognition, comprising the steps of:

rescoring the likely hypotheses by using semantic content and lexical content by employing a semantic structured language model which combines a semantic language model and a lexical language model (304, Fig. 9, also paragraph [0088]); and

scoring parse trees to identify a best sentence according to the sentences' parse tree by employing semantic information and lexical information in the parse tree to clarify the recognized speech (320 and 324, Fig. 9, and paragraph [0088]), but Chelba

does not specifically mention generating a set of likely hypotheses in recognizing speech.

However, Lee et al. teach generating a set of likely hypotheses in recognizing speech (recognition results and multiple hypotheses from ASR engine 36 from Figs. 1 and 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of generating a set of likely hypotheses in recognizing speech as taught by Lee et al. for Chelba et al.'s method and program storage device readable by machine because Lee provides a method for speech recognition of a user speech input that contains a request to be processed, wherein a speech recognition engine generates recognized words form the user speech input (see Paragraph [0004]).

As per claims 18 and 30, Chelba et al. teach a method and program storage device readable by machine for speech recognition, comprising the steps of:

rescoring the likely hypotheses by using semantic content and lexical content by employing a semantic structured language model which combines a semantic language model and a lexical language model (304, Fig. 9, and paragraph [0088]);

scoring parse trees to identify a best sentence according to the sentences' parse tree by employing semantic information and lexical information in the parse tree to clarify the recognized speech (320 and 324, Fig. 9, and paragraph [0088]); and

determining a confidence measurement by employing scores obtained from the semantic structured language models along with other speech recognition based features (confidence measure module 422 from Fig. 11 and Paragraph [0089]), but Chelba et al. do not specifically mention

generating a set of likely hypotheses in recognizing speech.

However, Lee et al. teach generating a set of likely hypotheses in recognizing speech (recognition results and multiple hypotheses from ASR engine 36 from Figs. 1 and 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of generating a set of likely hypotheses in recognizing speech as taught by Lee et al. for Chelba et al.'s method and program storage device readable by machine because Lee provides a method for speech recognition of a user speech input that contains a request to be processed, wherein a speech recognition engine generates recognized words form the user speech input (see Paragraph [0004]).

As per claims 3 and 19, Chelba et al. in view of Lee et al. teach the method according to claims 1 and 18, wherein the set of likely hypotheses is in the form of an N-best list or lattice (Lee's Paragraph [0018]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of generating a set of likely hypotheses in recognizing speech as taught by Lee et al. for Chelba et al.'s method and program

storage device readable by machine because Lee provides a method for speech recognition of a user speech input that contains a request to be processed, wherein a speech recognition engine generates recognized words form the user speech input (see Paragraph [0004]).

As per claims 5 and 21, Chelba et al. in view of Lee et al. teach the method according to claims 1 and 18, wherein the step of scoring parse trees to identify a best sentence according to the sentence's parse tree includes the step of training the structured semantic language models in accordance with history parameters and history questions (Paragraph [0054] show the probabilities from which the model is based with the use of history parameters. Also Fig. 4 demonstrates the use of the history questions in the model).

As per claim 8, Chelba et al. in view of Lee et al. teach the method according to claim 1, further comprising the step of determining a confidence measurement (confidence measure module 422 from Fig. 11).

As per claim 9, Chelba et al. in view of Lee et al. teach the method according to claim 8, wherein the step of determining a confidence measurement includes employing a statistical method to combine word sequences with a parser tree to determine a confidence score for recognized speech (Paragraphs [0081], [0083], [0088], and [0089], also Figs. 9, 10, and 11).

As per claim 10, Chelba et al. in view of Lee et al. teach the method according to claim 8, wherein the step of determining a confidence measurement includes employing scores obtained from the semantic structured language models along with other speech recognition based features (Paragraphs [0088] and [0089], and Fig. 11).

As per claims 11 and 24, Chelba et al. in view of Lee et al. teach the method according to claims 1 and 18, further comprising the step of extracting probabilities assigned to tags, labels, and extensions obtained from a parser tree (Paragraphs [0045]-[0054]).

As per claims 14 and 27, Chelba et al. in view of Lee et al. teach the method according to claims 1 and 18, wherein the semantic structured language models are trained using one or more of relative labels, token numbers, and answers to question related to word order or placement (Paragraphs [0044] - [0046], and [0071] - [0072], headwords, non-terminal labels, r, n, k, (head-word, non-terminal label)).

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chelba et al. (US 2003/0216905) in view of Lee et al. (2002/0087316), as applied to claim 1 above, and further in view of Ryzchachkin et al. (US 2005/0055199).

As per claim 2, Chelba et al. in view of Lee et al. teach the method according to claim 1, but they do not specifically mention the method further comprising the step of

training a language model using speech recognition methods. However, Ryzchachkin et al. teach step of training a language model using speech recognition methods (Paragraph [0003]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of training a language model using speech recognition methods as taught by Ryzchachkin et al. for Chelba's method, as modified by Lee because Ryzchachkin et al. provides statistical language models used in consecutive speech recognition (CSR) systems, and more specifically to the more efficient organization of such models (Paragraph [0001]).

7. Claims 4, 6-7, 13, 15-16, 20, 22-23, 26, and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chelba et al. (US 2003/0216905) in view Lee et al. (2002/0087316) as applied to claims 1, 5, 18, and 21 above, and further in view of Ratnaparkhi (Learning to Parse Natural Language with Maximum Entropy Models, 1999).

As per claims 4 and 20, Chelba et al. in view of Lee et al. teach the method according to claims 1 and 18, but they do not specifically mention wherein the step of rescoring employs maximum entropy method 2 (MELM2) or maximum entropy method 3 (MELM3) semantic structured language models. However, Ratnaparkhi teaches the step of rescoring employs MELM2 or MELM3 semantic structured language models (Sections 3.2.6. and 3.2.1., Fig. 9 and Table 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of rescoring employing MELM2 or MELM3 semantic structured language models as taught by Ratnaparkhi for Chelba's method, as modified by Lee et al., because Ratnaparkhi provides a maximum entropy "framework, [which] is independent of the parsing task and can be used for many other problems, like language modeling for speech recognition." (see 1st paragraph of Section 3.2.1.).

As per claims 6 and 22, Chelba et al. in view of Lee et al. teach the method according to claims 5 and 21, but they do not specifically mention wherein the history parameters include a previous word (wj-1), a previous word of the previous word (wj-2), a parent constituent label (L), a number of tokens (N) to the left since L starts, a previous closed constituent label (O), a number of tokens (M) to the left after O finishes, and a grandparent label (G). However, Ratnaparkhi teaches history parameters, which include a previous word (wj-1), a previous word of the previous word (wj-2), a parent constituent label (L), a number of tokens (N) to the left since L starts, a previous closed constituent label (O), a number of tokens (M) to the left after O finishes, and a grandparent label (G) (Fig. 9, Sections 3.2 and 3.2.1, and equation (1) from Section 3.2.1., wherein b of equation (1) represents "any information that might be useful for predicting a," such as number of tokens for labels L or O.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of history parameters as taught by Ratnaparkhi for Chelba's method, as modified by Lee et al., because Ratnaparkhi

provides a maximum entropy "framework, [which] is independent of the parsing task and can be used for many other problems, like language modeling for speech recognition." (see 1st paragraph of Section 3.2.1.). It would have also been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of history parameters as taught by Ratnaparkhi in order to use arbitrarily diverse information in the context of b when computing the probability of an action a of some procedure X (see 1st paragraph of Section 3.2.).

As per claims 7 and 23, Chelba et al. in view of Lee et al. teach the method according to claims 5 and 21, but they do not specifically mention wherein the history questions include a default, (wj,1), (wj-1, wj-2), (L, N), (O, M), and (L, G). However, Ratnaparkhi teaches history questions including a default, (wj-1), (wj-1, wj-2), (L, N), (O, M), and (L, G) (Fig. 9, Sections 3.2 and 3.2.1, and equation (1) from Section 3.2.1., wherein b of equation (1) represents "any information that might be useful for predicting a," such as number of tokens for labels L or O.).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of history parameters as taught by Ratnaparkhi for Chelba's method, as modified by Lee et al., because Ratnaparkhi provides a maximum entropy "framework, [which] is independent of the parsing task and can be used for many other problems, like language modeling for speech recognition." (see Ist paragraph of Section 3.2.1.). It would have also been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of

history parameters as taught by Ratnaparkhi in order to use arbitrarily diverse information in the context of b when computing the probability of an action a of some procedure X (see 1st paragraph of Section 3.2.).

As per claims 13 and 26, Chelba et al. in view of Lee et al. teach the method according to claims 1 and 18, but he does not specifically mention wherein the semantic structured language models being trained by employing unigram, bigram; and trigram features. However, Ratnaparkhi teaches the semantic structured language models trained by employing unigram, bigram, and trigram features (Fig. 9 and Table 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of semantic structured language models trained by employing unigram, bigram and trigram features as taught by Ratnaparkhi for Chelba's method, as modified by Lee et al., because Ratnaparkhi provides a maximum entropy "framework, [which] is independent of the parsing task and can be used for many other problems, like language modeling for speech recognition." (see 1st paragraph of Section 3.2.1 .).

As per claims 15 and 28, Chelba et al. in view of Lee et al. teach the method according to claims 1 and 18, but they do not specifically mention wherein the semantic structured language model is trained by including a unigram feature, a bigram feature, a trigram feature, a current active parent label (Li), a number of tokens (Ni) to the left since current parent label (Li) starts, a previous closed constituent label (Oi), a number

of tokens (Mi) to the left after the previous closed constituent label finishes, and a number of questions to classify parser tree entries. However, Ratnaparkhi teaches semantic structured language models trained by including a unigram feature, a bigram feature, a trigram feature, a current active parent label (Li), a number of tokens (Ni) to the left since current parent label (Li) starts, a previous closed constituent label (Oi), a number of tokens (Mi) to the left after the previous closed constituent label finishes; and a number of questions to classify parser tree entries (Fig. 9, Table 3, Sections 3.2, 3.2.1, and 3.2.6., and equation (1) from Section 3.2.1., wherein b of equation (1) represents "any information that might be useful for predicting a," such as number of tokens for labels L or O.).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of semantic structured language models trained by employing unigram, bigram, trigram, labels, and token features as taught by Ratnaparkhi for Chelba's method, as modified by Lee et al., because Ratnaparkhi provides a maximum entropy "framework, [which] is independent of the parsing task and can be used for many other problems, like language modeling for speech recognition." (see 1st paragraph of Section 3.2.1.).

As per claims 16 and 29, Chelba et al. in view of Ratnaparkhi teach the method according to claims 15 and 28, wherein the questions include a default, (wj-1), (wj-1, wj-2), (Li), (Li, Ni), (Li, Ni, wj-1), and (Oi, Mi), where w represents a word and j is an index representing word position (Ratnaparkhi's Fig. 9, Sections 3.2, 3.2.1, and 3.2.6., and

equation (1) from Section 3.2.1., wherein b of equation (1) represents "any information that might be useful for predicting a," such as number of tokens for labels L or O.).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of including a default, (wj-1), (wj-1, wj-2), (Li), (Li, Ni), (Li, Ni, wj-1), and (Oi, Mi) questions as taught by Ratnaparkhi for Chelba's method, as modified by Lee et al., because Ratnaparkhi provides a maximum entropy framework which is independent of the parsing task and can be used for many other problems, like language modeling for speech recognition, and which permits the use of arbitrarily diverse information in the context b when computing the probability of an action a of some procedure X (see Ist paragraphs of sections 3.2. and 3.2.1.).

8. Claims 34, 36-37, and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chelba et al. (US 2003/0216905) in view of Ratnaparkhi (Learning to Parse Natural Language with Maximum Entropy Models, 1999).

As per claim 34, Chelba et al. teach the system according to claim 31, but they do not specifically mention the semantic language model including unigram, bigram, and trigram features. However, Ratnaparkhi teaches the semantic language model including unigram, bigram, and trigram features (Fig. 9 and Table 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of a semantic language model including unigram, bigram and trigram features as taught by Ratnaparkhi for Chelba's system because Ratnaparkhi provides a maximum entropy "framework, [which] is independent

of the parsing task and can be used for many other problems, like language modeling for speech recognition." (see 1st paragraph of Section 3.2.1.).

As per claim 36, Chelba et al. teach the system according to claim 31, but they do not specifically mention wherein the semantic model is trained by including a unigram feature, a bigram feature, a trigram feature, a current active parent label (Li), a number of tokens (Ni) to the left since current parent label (Li) starts, a previous closed constituent label (Oi), a number of tokens (Mi) to the left after the previous closed constituent label finishes, and a number of questions to classify parser tree entries.

However, Ratnaparkhi teaches a semantic model trained by including a unigram feature, a bigram feature, a trigram feature, a current active parent label (Li), a number of tokens (Ni) to the left since current parent label (Li) starts, a previous closed constituent label (Oi), a number of tokens (Mi) to the left after the previous closed constituent label finishes, and a number of questions to classify parser tree entries (Fig. 9, Table 3, Sections 3.2, 3.2.1, and 3.2.6, and equation (1)from Section 3.2.1., wherein b of equation (1) represents "any information that might be useful for predicting a," such as number of tokens for labels I or O.).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of a semantic model trained by including unigram, bigram, trigram, labels, and token features as taught by Ratnaparkhi for Chelba's system because Ratnaparkhi provides a maximum entropy "framework,

[which] is independent of the parsing task and can be used for many other problems, like language modeling for speech recognition." (see 1st paragraph of Section 3.2.1.). As per claim 37, Chelba et al. in view of Ratnaparkhi teach the system according to claim 36, wherein the questions include a default, (wj-1), (wj-1, wj-2), (Li), (Li, Ni), (Li, Ni, wj-1), and (Oi, Mi), where w represents a word and j is an index representing word position (Ratnaparkhi's Fig. 9, Sections 3.2, 3.2.1, and 3.2.6, and equation (1) from Section 3.2.1., wherein b of equation (1) represents "any information that might be useful for predicting a," such as number of tokens for labels L or O.).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of including a default, (wj-1), (wj-1, wj-2), (Li), (Li, Ni), (Li, Ni, wj-1), and (Oi, Mi) questions as taught by Ratnaparkhi for Chelba's system because Ratnaparkhi provides a maximum entropy framework which is independent of the parsing task and can be used for many other problems, like language modeling for speech recognition, and which permits the use of arbitrarily diverse information in the context b when computing the probability of an action a of some procedure X (see 1st paragraphs of sections 3.2. and 3.2.1 .).

As per claim 39, Chelba et al. teach the system according to claim 38, but they do not specifically mention wherein the history parameters include a previous word (wj-1), a previous word of the previous word (wj-2), a parent constituent label (L), a number of tokens (N) to the left since L starts, a previous closed constituent label (O), a number of tokens (M) to the left after O finishes, and a grandparent label (G). However,

Ratnaparkhi teaches history parameters, which include a previous word (wj-1), a previous word of the previous word (wj-2), a parent constituent label (L), a number of tokens (N) to the left since L starts, a previous closed constituent label (O), a number of tokens (M) to the left after O finishes, and a grandparent label (G) (Fig. 9, Sections 3.2 and 3.2.1, and equation (1) from Section 3.2.1., wherein b of equation (1) represents "any information that might be useful for predicting a," such as number of tokens for labels L or O.)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of history parameters as taught by Ratnaparkhi for Chelba's system because Ratnaparkhi provides a maximum entropy "framework, [which] is independent of the parsing task and can be used for many other problems, like language modeling for speech recognition." (see 1st paragraph of Section 3.2.1.). It would have also been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of history parameters as taught by Ratnaparkhi in order to use arbitrarily diverse information in the context of b when computing the probability of an action a of some procedure X (see 1st paragraph of Section 3.2.).

As per claim 40, Chelba et al. in view of Ratnaparkhi teach the system according to claim 39, but they do not specifically mention wherein the history questions include a default, (wj-1), (wj-1, wj-2), (L, N), (O, M), and (L, G). However, Ratnaparkhi teaches history questions including a default, (wj-1), (wj-1, wj-2), (L, N), (O, M), and (L, G) (Fig.

9, Sections 3.2 and 3.2.1, and equation (1) from Section 3.2.1., wherein b of equation (1) represents "any information that might be useful for predicting a," such as number of tokens for labels L or O.).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of history parameters as taught by Ratnaparkhi for Chelba's system because Ratnaparkhi provides a maximum entropy "framework, [which] is independent of the parsing task and can be used for many other problems, like language modeling for speech recognition." (see 1st paragraph of Section 3.2.1.). It would have also been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of history parameters as taught by Ratnaparkhi in order to use arbitrarily diverse information in the context of b when computing the probability of an action a of some procedure X (see 1st paragraph of Section 3.2.).

9. Claims 12 and 25 are rejected under 35 U.S.C. 103(a) as being Unpatentable over Chelba et al. (US 2003/0216905) in view of Lee et al. (US 2002/0087316), as applied to claims 11 and 24 above, and further in view of San Segundo et al. (Confidence measures for spoken dialogue systems, 2001).

As per claims 12 and 25, Chelba et al. in view of Lee et al. teach the method according to claims 11 and 24, but they do not specifically mention the method further comprising the step of combining the semantic structured language models and speech recognition based features with the extracted probabilities using a classifier. However,

San Segundo et al. teach the step of combining the semantic structured language models and speech recognition based features with the extracted probabilities (Abstract and Sections 3, 3.1, 4, and 4.1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the feature of combining the semantic structured language models and speech recognition based features with the extracted probabilities using a classifier as taught by San Segundo et al. for Chelba's method because San Segundo provides a neural network that combines features in each of the levels (word, utterance, and concept) in order to determine confidence measures which are used to improve the word recognition accuracy (Abstract).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Huag et al. (US Patent 6,556,964) provides a probabilistic system for natural language processing that performs a semantic analysis on a parse tree based on a probabilistic model of lexical semantics (see Claim 13).

12. Parks (US Patent 6,596,031) provides a markup language and system for processing electronic documents using the markup language, the system including a lexical analyzer for tokenizing the text for parsing and a semantic analyzer for outputting a file having a hierarchical file structure based on the parse tree (Col. 7, line 63 to Col. 8, line 12).

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalie Lennox whose telephone number is (571) 270-1649. The examiner can normally be reached on Monday to Friday 9:30 am - 7 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571)272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NL 02/06/2008

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SUPERVISORY PATENT EXAMINER